heating said semiconductor wafer with a thermal heating device placed adjacent to said wafer;

pulsing a precursor fluid into said reaction chamber, said precursor fluid forming a solid layer on said semiconductor wafer;

thereafter exposing said solid layer to light energy in said reaction chamber; and

wherein between each pulse of said precursor fluid, (i) said reaction chamber is purged by flowing an inert gas through said reaction chamber in order to substantially remove any said precursor fluid not converted into a solid, and (ii) said solid layer is exposed to said light energy.

50. A process for forming layers in electronic devices comprising the steps of:

providing a reaction chamber;

placing a semiconductor wafer in said reaction chamber;

heating said semiconductor wafer with a thermal heating device placed adjacent to said wafer;

pulsing a precursor fluid into said reaction chamber, said precursor fluid forming a solid layer on said semiconductor wafer, wherein said solid layer is a material selected from the group consisting of tungsten, tungsten nitride, tantalum nitride, titanium nitride, copper, aluminum, ruthenium oxide, iridium oxide, and silver; and

thereafter exposing said solid layer to light energy in said reaction chamber;

wherein said precursor fluid is substantially exhausted and removed from said reaction chamber and said solid layer is exposed to said light energy in between each pulse of said precursor fluid.

51. A process for forming layers in electronic devices comprising the steps of:

providing a reaction chamber;

placing a semiconductor wafer in said reaction chamber;

heating said semiconductor wafer with a thermal heating device placed adjacent to said wafer;

pulsing a precursor fluid into said reaction chamber, said precursor fluid forming a solid layer on said semiconductor wafer, wherein said solid layer comprises a material selected from the group consisting of zirconium oxide, aluminum oxide, barium strontium titanate and a silicate; and

thereafter exposing said solid layer to light energy in said reaction chamber;

wherein said precursor fluid is substantially exhausted and removed from said reaction chamber and said solid layer is exposed to said light energy in between each pulse of said precursor fluid.

Please add the following new claims:

52. A process for forming layers in electronic devices comprising the steps of:

providing a reaction chamber, the reaction chamber comprising a cold wall chamber;

placing a substrate in said reaction chamber;

pulsing a precursor fluid into said reaction chamber;

exposing said precursor fluid to light energy in said reaction chamber causing said precursor fluid to convert into a solid layer on said substrate; and

wherein said precursor fluid is substantially exhausted and removed from the reaction chamber in between each pulse of the precursor fluid.

53. A process as defined in claim 52, wherein said precursor fluid comprises a liquid vapor.

54. A process as defined in claim 52, wherein said precursor fluid comprises a gas.

55. A process as defined in claim 52, wherein said substrate comprises a semiconductor wafer.

56. A process as defined in claim 52, further comprising the step of heating said substrate with an electrical resistance heater during formation of said layer.

57. A process as defined in claim 52, wherein said light energy is supplied by light energy sources positioned outside said reaction chamber.

58. A process as defined in claim 52, further comprising the step of maintaining said reaction chamber at less than atmospheric pressure when pulsing said precursor fluid into said reaction chamber.

59. A process as defined in claim 52, wherein said light energy is pulsed in substantial synchronization with said precursor fluid.

60. A process as defined in claim 52, further comprising the step of flowing an inert gas through said reaction chamber in between pulses of said precursor fluid in order to purge from said reaction chamber any precursor fluid not converted into a solid.

61. A process as defined in claim 52, wherein said solid layer comprises a dielectric material.

62. A process as defined in claim 52, wherein said solid layer comprises a conductive material.

63. A process as defined in claim 52, wherein said solid layer comprises zirconium oxide.

64. A process as defined in claim 52, wherein said precursor fluid comprises a hydride.

65. A process as defined in claim 52, wherein said solid layer comprises a material selected from the group consisting of tungsten, tungsten nitride, tantalum nitride, titanium nitride, copper, aluminum, ruthenium oxide, iridium oxide, and silver.

66. A process as defined in claim 52, wherein said solid layer comprises a material selected from the group consisting of zirconium oxide, aluminum oxide, a nitride, barium strontium titanate and a silicate.

67. A process as defined in claim 52, wherein said solid layer comprises zirconium hafnium oxide.

68. A process as defined in claim 52, further comprising the step of maintaining said reaction chamber at a pressure of less than about 5 torr when pulsing said precursor fluid into said reaction chamber.

69. A process as defined in claim 52, wherein said substrate is maintained at a temperature of at least 100° C during formation of said solid layer.

70. A process as defined in claim 52, wherein the reaction chamber includes walls, the walls being made from an insulating materials.

71. A process as defined in claim 52, wherein the reaction chamber includes a cooling system for cooling the walls of the reaction chamber.

72. A process as defined in claim 70, wherein the insulating material comprises quartz.

73. A process as defined in claim 52, wherein between selected pulses of the precursor fluid, the solid layer being formed is annealed.

74. A process as defined in claim 52, wherein between each pulse of the precursor fluid, the solid layer being formed is cooled.

REMARKS

Claims 20 through 22, 24 through 25, 29, 30, and 50 through 74 remain pending in the present application, including independent claims 20, 50, 51, and 52.

In the latest Office Action, independent claim 20 was rejected under 35 USC § 103 in view of the combination of Utsumi and Dautartas and in view of the combination of Nishizawa and Dautartas. As now amended, however, claim 20 along with new claim 52 each require that the reaction chamber be a cold wall chamber. A cold wall chamber is particularly defined and described in the present application on pages 4 and 7.

To the contrary, the prior art cited in the last Office Action all teach the use of a "hot wall" system. For instance, Nishizawa states in column 4 at line 22 that the growth vessel be made from stainless steel or like metal. Since metals are conductive and will heat up during the process, Nishizawa teaches a hot wall system.